U.S. Department
of Transportation

**Pipeline and
Hazardous Materials
Safety Administration**

**East Building, PHH-23
1200 New Jersey Avenue SE
Washington, D.C. 20590**

# COMPETENT AUTHORITY CERTIFICATION FOR A TYPE B(U) RADIOACTIVE MATERIALS PACKAGE DESIGN CERTIFICATE USA/9035/B(U)-96, REVISION 16

This certifies that the radioactive material package design described has been certified by the Competent Authority of the United States as meeting the regulatory requirements for a Type B(U) packaging for radioactive material as prescribed in the regulations of the International Atomic Energy Agency[1] and the United States of America[2].

1. Package Identification - Model No. 680-OP.

2. Package Description and Authorized Radioactive Contents - as described in U.S. Nuclear Regulatory Commission Certificate of Compliance No. 9035, Revision 21 (attached).

3. General Conditions -

   a. Each user of this certificate must have in his possession a copy of this certificate and all documents necessary to properly prepare the package for transportation. The user shall prepare the package for shipment in accordance with the documentation and applicable regulations.

   b. Each user of this certificate, other than the original petitioner, shall register his identity in writing to the Office of Hazardous Materials Technology, (PHH-23), Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation, Washington D.C. 20590-0001.

   c. This certificate does not relieve any consignor or carrier from compliance with any requirement of the Government of any country through or into which the package is to be transported.

   d. Records of Quality Assurance activities required by Paragraph 310 of the IAEA regulations[1] shall be maintained and made available to the authorized officials for at least three years after the last shipment authorized by this certificate. Consignors in the United States exporting shipments under this certificate shall satisfy the applicable requirements of Subpart H of 10 CFR 71.

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[1] "Regulations for the Safe Transport of Radioactive Material, 1996 Edition (Revised), No. TS-R-1 (ST-1, Revised)," published by the International Atomic Energy Agency(IAEA), Vienna, Austria.

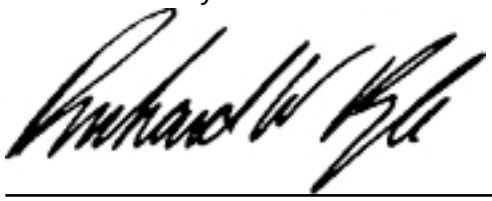
[2] Title 49, Code of Federal Regulations, Parts 100-199, United States of America.

4. Marking and Labeling - The package shall bear the marking USA/9035/B(U)-96 in addition to other required markings and labeling.

5. Expiration Date - This certificate expires on June 30, 2010. On April 30, 2009, this certificate supersedes all previous revisions of USA/9035/B(U)-96.

This certificate is issued in accordance with paragraph 808 of the IAEA Regulations and Section 173.471 of Title 49 of the Code of Federal Regulations, in response to the April 28, 2008 petition by QSA Global, Inc., Burlington, MA, and in consideration of other information on file in this Office.

Certified By:



Apr 28 2008

Robert A. Richard (DATE)
Deputy Associate Administrator for Hazardous Materials Safety

Revision 16 - Issued to endorse U.S. Nuclear Regulatory Commission Certificate of Compliance No. 9035, Revision 21.

NRC FORM 618
(6-2000)
10 CFR 71

U.S. NUCLEAR REGULATORY COMMISSION

# CERTIFICATE OF COMPLIANCE
## FOR RADIOACTIVE MATERIAL PACKAGES

| a. CERTIFICATE NUMBER | b. REVISION NUMBER | c. DOCKET NUMBER | d. PACKAGE IDENTIFICATION NUMBER | PAGE | | PAGES |
|---|---|---|---|---|---|---|
| 9035 | 21 | 71-9035 | USA/9035/B(U)-96 | 1 | OF | 3 |

2. PREAMBLE

a. This certificate is issued to certify that the package (packaging and contents) described in Item 5 below meets the applicable safety standards set forth in Title 10, Code of Federal Regulations, Part 71, "Packaging and Transportation of Radioactive Material."

b. This certificate does not relieve the consignor from compliance with any requirement of the regulations of the U.S. Department of Transportation or other applicable regulatory agencies, including the government of any country through or into which the package will be transported.

3. THIS CERTIFICATE IS ISSUED ON THE BASIS OF A SAFETY ANALYSIS REPORT OF THE PACKAGE DESIGN OR APPLICATION

a. ISSUED TO *(Name and Address)*

QSA Global Inc.
40 North Avenue
Burlington, MA 01803

b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION

AEA Technology/QSA, Inc., application dated August 29, 2005.

4. CONDITIONS

This certificate is conditional upon fulfilling the requirements of 10 CFR Part 71, as applicable, and the conditions specified below.

5.

(a) Packaging

(1) Model No.: 680-OP

(2) Description

The Model No. 680-OP consists of a gamma ray projector within a protective steel container. The protective container is of welded steel construction and is approximately 32 inches long, 19 inches wide, and 18-1/2 inches high. Polyurethane foam and wood inserts locate the Model 680 series projectors in the center of the container and provide impact protection.

The 680 series projectors include the Model Nos. 680, 680E, 680A, 680AE, 680B and 680BE. The primary components of the projector consist of an outer steel shell, internal bracing, polyurethane foam, depleted uranium shield, and an "S" tube. The radioactive contents are securely positioned in the "S" tube by a source cable locking device and shipping plug. A 1/4-inch thick steel shipping plate is bolted over the source locking mechanism for additional protection during transport. Tamper-proof seals are provided on the outer steel container. The dimensions of the projector are approximately 21 inches long, 14-5/8 inches wide, and 11-13/16 inches high. The maximum weight of the package is 615 pounds, and the maximum weight of the projector is 465 pounds.

(3) Drawings

The packaging is constructed in accordance with QSA Global Inc., Drawing No. R68090, Sheets 1-7, Rev. H, and R680-OP, Sheets 1-7, Rev. K.

| NRC FORM 618 (8-2000) 10 CFR 71 | | | U.S. NUCLEAR REGULATORY COMMISSION | | |
|---|---|---|---|---|---|
| CERTIFICATE OF COMPLIANCE FOR RADIOACTIVE MATERIAL PACKAGES | | | | | |
| 1. a. CERTIFICATE NUMBER | b. REVISION NUMBER | c. DOCKET NUMBER | d. PACKAGE IDENTIFICATION NUMBER | PAGE | PAGES |
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5.(b) Contents

(1) Type and form of material:

Cobalt-60 as sealed sources which meet the requirements of special form radioactive material.

(2) Maximum quantity of material per package:

110 curies (4.1 TBq) (output)

Output curies are determined by measuring the source output at 1 meter and expressing its activity in curies derived from the following: 1.30 R/h-Ci cobalt-60 at 1 meter (Ref: American National Standards Institute, N432-1980, "Radiological Safety for the Design and Construction of Apparatus for Gamma Radiography").

6. The source shall be secured in the shielded position of the packaging by the source assembly lock; lock cap and safety plug assembly. The source assembly lock, lock cap and safety plug assembly must be fabricated of materials capable of resisting a 1475°F fire environment for one half hour and maintaining their positioning function. The locking ball of the source assembly must engage the locking device. The flexible cable of the source assembly and shipping plug must be of sufficient length and diameter to provide positive positioning of the source in the shielded position.

7. The nameplates shall be fabricated of materials capable of resisting the fire test of 10 CFR Part 71 and maintaining their legibility.

8. In addition to the requirements of Subpart G of 10 CFR Part 71:

(a) The package must meet the Acceptance Tests and Maintenance Program of Section 8 of the application; and

(b) Each package shall be operated and prepared for shipment in accordance with Section 7 of the application.

9. Revision No. 20 of this certificate may be used until April 30, 2009.

10. The package authorized by this certificate is hereby approved for use under the general license provisions of 10 CFR 71.17.

11. Expiration date: June 30, 2010.

| NRC FORM 618 (8-2000) 10 CFR 71 | U.S. NUCLEAR REGULATORY COMMISSION | | | | |
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## REFERENCES

AEA Technology/QSA, Inc., application dated August 29, 2005.

Supplements dated: October 25, 2005; February 20, August 1, August 11, and August 15, 2006; and January 18, February 8, and April 3, 2008.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Meraj Rahimi, Acting Chief
Licensing Branch
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety
and Safeguards

Date: April 24, 2008.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION REPORT
Docket No. 71-9035
Model No. 680-OP
Certificate of Compliance No. 9035
Revision No. 21

## SUMMARY

By application dated January 18, 2008, supplemented February 8, and April 3, 2008, QSA Global, Inc. (QSA) submitted an amendment request for Certificate of Compliance (CoC) No. 9035 for the Model No. 680-OP package. QSA requested the amendment to further correct and detail information referenced in the CoC drawings for the Model No. 680-OP.

## EVALUATION

QSA requested minor design changes, including the addition of screws, nails, gaskets, spacers, welds and construction aids to the Model No. 680-OP package. Three alternate configurations for the skid feet, included in Drawing No. R680-OP, Revision K, Sheet 5 of 7, were proposed by QSA.

Among the changes, QSA clarified the dimensions and positions of wood inserts as construction aids in Drawing No. R680-OP, Revision K, Sheet 4 of 7. The possible positions of the lid tabs supporting the latches used to close the overpack box were clarified in Drawing No. R680-OP, Revision K, Sheet 5 of 7.

QSA clarified that the Model No. 680-OP will be fabricated according to American Welding Society (AWS) code D.1.3, and inspected by welders qualified to American Society for Non-destructive Testing (ASTN) SNT-TC-1 A or equivalent requirements. This clarification was included in Drawing No. R680-OP, Revision K, Sheet 2 of 7, as Note 10.

## CONCLUSION

The NRC staff reviewed the amendment request for the Model No. 680-OP package and concluded that the requested design changes have been adequately described and do not affect the ability of the package to meet the requirements of 10 CFR Part 71. The CoC has been revised to reflect the changes requested by QSA.

Issued with Certificate of Compliance No. 9035, Revision No. 21
on April 24, 2008.

U.S. Department
of Transportation

**Pipeline and
Hazardous Materials
Safety Administration**

**East Building, PHH-23
1200 New Jersey Avenue SE
Washington, D.C. 20590**

**CERTIFICATE NUMBER:** USA/9035/B(U)-96, Revision 16

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